

WHAT IS CLAIMED IS:

1. A method for eliminating near-end crosstalk in a digital subscriber line (DSL) system, comprising:

detecting crosstalk on a first line, the crosstalk  
5 generated by communication occurring on a second line;

determining a phase of the crosstalk detected on the first line; and

communicating a first signal on the first line in response to the phase.

10

2. The method of Claim 1, further comprising selecting an arbitrary phase for the first signal if a communication device coupled to the first line fails to detect the crosstalk.

15

3. The method of Claim 1, wherein determining a phase of the crosstalk detected on the first line comprises:

detecting a pulse sequence associated with a second  
20 signal communicated on the second line; and

setting the phase of the first signal based on the pulse sequence.

4. The method of Claim 1, wherein determining the  
25 phase of the crosstalk detected on the first line comprises:

detecting a data pulse associated with a second signal communicated on the second line based on an width associated with the data pulse; and

30 setting the phase of the first signal based on the width of the data pulse.

5. The method of Claim 1, wherein determining the phase of the crosstalk detected on the first line comprises:

detecting a control pulse associated with a second  
5 signal communicated on the second line based on an amplitude associated with the control pulse; and

setting the phase of the first signal based on the amplitude of the control pulse.

10 6. The method of Claim 1, further comprising monitoring a third line for interference generated by a third signal after communicating the first signal on the first line.

15 7. The method of Claim 1, further comprising:  
monitoring a third line for interference generated by a third signal after communicating the first signal on the first line; and

receiving a control signal from a remote device if a  
20 communication device coupled to the first line fails to detect the interference on the third line.

8. The method of Claim 1, further comprising:  
monitoring a third line for interference generated  
by a third signal after communicating the first signal on  
the first line;

5 receiving a control signal from a remote device if a  
communication device coupled to the first line fails to  
detect the interference on the third line;

determining if a control phase associated with the  
control signal is correct; and

10 adjusting the control phase if the communication  
device receives the control signal when the third signal  
is being communicated on the third line.

9. The method of Claim 1, further comprising:  
15 monitoring a third line for interference generated  
by a third signal after communicating the first signal on  
the first line;

receiving a control signal from a remote device if a  
communication device coupled to the first line fails to  
20 detect the interference on the third line;

determining if a control phase associated with the  
control signal is correct;

25 adjusting the control phase if the communication  
device receives the control signal when the third signal  
is being communicated on the third line; and

communicating a command on the first line to the  
remote device, the command operable to initiate  
communication of a data signal from the remote device.

30 10. The method of Claim 1, wherein the first and  
second lines comprise twisted pair wiring.

11. The method of Claim 1, wherein the first signal is communicated using a time domain duplexing (TDD) technique.

5        12. The method of Claim 1, further comprising:  
monitoring a third line for interference generated by a third signal after communicating the first signal on the first line; and

10        ending communication of the first signal on the first line if a communication device coupled to the first line detects interference on the third line.

13. A method for eliminating near-end crosstalk on adjacent lines in a digital subscriber line (DSL) system, comprising:

detecting crosstalk on a first line, the crosstalk  
5 generated by communication occurring on a second line;

synchronizing a first downstream signal with a second downstream signal communicated on the second line by matching a first phase associated with the first downstream signal to a second phase associated with the  
10 second downstream signal; and

communicating the first downstream signal on the first line in response to the first phase.

14. The method of Claim 13, further comprising  
15 selecting an arbitrary phase for the first downstream signal if crosstalk is not detected.

15. The method of Claim 13, wherein synchronizing a first downstream signal with the second downstream signal  
20 comprises:

detecting a pulse sequence associated with the second downstream signal; and

setting the first phase of the first signal based on the pulse sequence.

16. The method of Claim 13, wherein synchronizing a first downstream signal with the second downstream signal comprises:

5 detecting a data pulse associated with the second downstream signal based on an width associated with the data pulse; and

setting the first phase of the first signal based on the width of the data pulse.

10 17. The method of Claim 13, wherein synchronizing a first downstream signal with the second downstream signal comprises:

15 detecting a control pulse associated with the second signal based on an amplitude associated with the control pulse; and

setting the first phase of the first signal based on the amplitude of the control pulse.

20 18. The method of Claim 13, further comprising:  
monitoring a third line for interference generated by a third downstream signal after communicating the downstream signal on the first line; and

receiving an upstream control signal on the first line if interference is not detected on the third line.

19. The method of Claim 13, further comprising:
- monitoring a third line for interference generated  
by a third downstream signal after communicating the  
first downstream signal on the first line;
- 5 receiving an upstream control signal on the first  
line if interference is not detected on the third line;
- determining if a control phase associated with the  
upstream control signal is correct; and
- adjusting the control phase if the upstream control  
10 signal is received when the third downstream signal is  
being communicated on the third line.

20. A communication device, comprising:

an interface operable to couple to a network and  
receive communication from a first line;

5 a detector coupled to the interface, the detector  
operable to detect crosstalk on the first line, the  
crosstalk generated by communication occurring on a  
second line; and

a control unit coupled to the interface and the  
detector, the control unit operable to:

10 determine a phase of the crosstalk detected on  
the first line; and

communicate a first signal on the first line in  
response to the phase.

15 21. The communication device of Claim 20, wherein  
the control unit is further operable to select an  
arbitrary phase for the first signal if no crosstalk is  
detected on the first line.

20 22. The communication device of Claim 20, wherein  
the control unit determines the phase of the crosstalk  
by:

detecting a pulse sequence associated with a second  
signal communicated on the second line; and

25 setting the phase of the first signal based on the  
pulse sequence.



23. The communication device of Claim 20, wherein the control unit determines the phase of the crosstalk by:

5 detecting a data pulse associated with a second signal communicated on the second line based on an width associated with the data pulse; and

setting the phase of the first signal based on the width of the data pulse.

10 24. The communication device of Claim 20, wherein the control unit determines the phase of the crosstalk by:

15 detecting a control pulse associated with a second signal communicated on the second line based on an amplitude associated with the control pulse; and

setting the phase of the first signal based on the amplitude of the control pulse.

20 25. The communication device of Claim 20, wherein the detector is further operable to monitor a third line for interference generated by a third signal after communicating the first signal on the first line.

25 26. The communication device of Claim 20, wherein: the detector is further operable to monitor a third line for interference generated by a third signal after communicating the first signal on the first line; and

30 the control unit is further operable to receive a control signal from the first line if no interference is detected on the third line.

27. The communication device of Claim 20, wherein:  
the detector is further operable to monitor a third  
line for interference generated by a third signal after  
communicating the first signal on the first line; and

5 the control unit is further operable to:  
receive a control signal from the first line if  
no interference is detected on the third line;  
determine if a control phase associated with  
the control signal is correct; and  
10 adjust the control phase if the detector  
receives the control signal when the third signal is  
being transmitted on the third line.

28. The communication device of Claim 20, wherein:  
15 the detector is further operable to monitor a third  
line for interference generated by a third signal after  
communicating the first signal on the first line; and

the control unit is further operable to:  
receive a control signal from a the first line  
20 if no interference is detected on the third line;  
determine if a control phase associated with  
the control signal is correct;  
adjust the control phase if the detector  
receives the control signal when the third signal is  
25 being transmitted on the third line; and  
communicate a command to the first line, the  
command operable to initiate communication of a data  
signal from a remote device.

29. The communication device of Claim 20, wherein the control unit communicates the first signal on the first line using a time domain duplexing (TDD) technique.

30. Logic encoded in media for eliminating near-end crosstalk in a communication network and operable to perform the following steps:

5 detecting crosstalk on a first line, the crosstalk generated by communication occurring on a second line;

determining a phase of the crosstalk detected on the first line; and

10 communicating a first signal on the first line in response to the phase.

31. The logic of Claim 30, wherein determining a phase of the crosstalk detected on the first line comprises:

15 detecting a pulse sequence associated with a second signal communicated on the second line; and

setting the phase of the first signal based on the pulse sequence.

20 32. The logic of Claim 30, wherein determining the phase of the crosstalk detected on the first line comprises:

detecting a data pulse associated with a second signal communicated on the second line based on an width associated with the data pulse; and

25 setting the phase of the first signal based on the width of the data pulse.

33. The logic of Claim 30, wherein determining the phase of the crosstalk detected on the first line comprises:

detecting a control pulse associated with a second  
5 signal communicated on the second line based on an amplitude associated with the control pulse; and

setting the phase of the first signal based on the amplitude of the control pulse.

10 34. The logic of Claim 30, further comprising:  
monitoring a third line for interference generated by a third signal after communicating the first signal on the first line; and

receiving a control signal from the remote device if  
15 a communication device coupled to the first line fails to detect the interference on the third line.

35. The logic of Claim 30, further comprising:  
monitoring a third line for interference generated  
by a third signal after communicating the first signal on  
the first line;

5 receiving a control signal from a remote device if a  
communication device coupled to the first line fails to  
detect the interference on the third line;

determining if a control phase associated with the  
control signal is correct;

10 adjusting the control phase if the communication  
device receives the control signal when the third signal  
is being communicated on the third line; and

communicating a command to the remote device, the  
command operable to initiate communication of a data  
15 signal from the remote device.

062891.0633

36. A apparatus for eliminating near-end crosstalk  
in a communication network, comprising:

means for detecting crosstalk on a first line, the  
crosstalk generated by communication occurring on a  
5 second line;

means for determining a phase of the crosstalk  
detected on the first line; and

means for communicating a first signal on the first  
line in response to the phase.

062891.0633